EXPERIMENTAL STUDY OF TEMPERATURE-DEPENDENCE LAWS OF NON-VOIGT ABSORPTION LINE SHAPE PARAMETERS

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To improve the understanding of temperature-dependence laws of spectral line shape parameters, spectra of the ν_3 rovibrational band of CO_2 perturbed by 10, 30, 100, 300 and 1000 mbar of N_2 were measured at nine temperatures between 190 K and 330 K using a 22 cm long single-pass absorption cell in a Bruker IFS125 HR Fourier Transform spectrometer. The spectra were fitted employing a quadratic speed-dependent hard collision model in the Hartmann-Tran implementation[bc] extended to account for line mixing in the Rosenkranz approximation by means of a multispectrum fitting approach developed at DLR[d]. This enables high accuracy parameter retrievals to reproduce the spectra down to noise level and we will present the behavior of line widths, shifts, speed-dependence-, collisional narrowing- and line mixing-parameters over this 140 K temperature range.

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[b] Ngo *et al.* JQSRT **29**, 89-100 (2013); JQSRT **134**, 105 (2014).
[c] Tran *et al.* JQSRT **129**, 199-203 (2013); JQSRT **134**, 104 (2014).
[d] Loos *et al.*, 2014; http://doi.org/10.5281/zenodo.11156.

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Session Categories (Keywords) by Relevance: Lineshapes, collisional effects — Fundamental interest — Linelists — Remote sensing — Infrared/Raman — Small molecules
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